

TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A FILING UNDER 35 U.S.C. 371

ATTORNEY'S DOCKET NUMBER

BET 00/1318

U.S. APPLICATION NO. (If known, see 37 CFR 1.5)

09/763528

INTERNATIONAL APPLICATION NO.

PCT/FR99/02024 /

INTERNATIONAL FILING DATE

August 20, 1999 /

PRIORITY DATE CLAIMED

August 27, 1998 /

TITLE OF INVENTION DEVICE FOR MONITORING THE PROPER OPERATION OF AN
INFORMATION EXCHANGE PROTOCOL

APPLICANT(S) FOR DO/EO/US

Robert LE PICHON

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a FIRST submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
 - a. ☒ is transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☐ has been transmitted by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☒ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. ☐ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
 - a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☐ have been transmitted by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☐ have not been made and will not be made.
8. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371 (c)(3)).
9. ☐ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
10. ☐ A translation of the annexes of the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11. to 16. below concern document(s) or information included:

11. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☐ A FIRST preliminary amendment.
☐ A SECOND or SUBSEQUENT preliminary amendment.
14. ☐ A substitute specification.
15. ☐ A change of power of attorney and/or address letter.
16. ☒ Other items or information:

International Preliminary Examination Report.

Application Data Sheet.

Search Report.

U.S. APPLICATION NO. 09/763528		INTERNATIONAL APPLICATION NO. PCT/FR99/02024		ATTORNEY'S DOCKET NUMBER BET 00/1318	
17. <input checked="" type="checkbox"/> The following fees are submitted: BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)): Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO \$1000. International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO 860. International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO 710. International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4) 690. International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4) 100. ENTER APPROPRIATE BASIC FEE AMOUNT =				CALCULATIONS PTO USE ONLY	
Surcharge of \$130.00 for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input checked="" type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(e)).				\$ 860	
				\$ 130	
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	\$	
Total claims	6 - 20 =	0	x \$ 18.	\$ 0	
Independent claims	1 - 3 =	0	x 80.	\$ 0	
MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ 270.	\$	
TOTAL OF ABOVE CALCULATIONS =				\$ 990	
Reduction of 1/2 for small entity				\$	
SUBTOTAL =				\$ 990	
Processing fee of \$130.00 for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(f)).				\$	
TOTAL NATIONAL FEE =				\$ 990	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property +				\$	
TOTAL FEES ENCLOSED =				\$ 990	
				Amount to be refunded:	\$
				charged:	\$

- a. ☒ A check in the amount of \$ 990 to cover the above fees is enclosed.
- b. ☐ Please charge my Deposit Account No. _____ in the amount of \$ _____ to cover the above fees.
A duplicate copy of this sheet is enclosed.
- c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required by 37 CFR 1.16 and 1.17, or credit any overpayment to Deposit Account No. 25-0120. A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137 (a) or (b)) must be filed and granted to restore the application to pending status.

February 26, 2001

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2/PRTS

09/763528
JC02 Rec'd PCT/PTO 26 FEB 2001

Device for monitoring the proper operation
of an information exchange protocol

5 The present invention relates to a device for
monitoring the proper conduct of a protocol for
exchanging information conveyed on a cabled telephone
network.

10 Generally, when data transmission problems
arise between data sending and receiving stations, due
in particular to noncompliance with a telecommunication
protocol, it is necessary, in order to solve these
problems, to undertake an analysis of the data conveyed
on the network.

15 To do this, one conventionally uses a protocol
analyzer which will be plugged into a data transfer
line by means of which one of the sending and receiving
stations is connected to the telephone network.

20 By processing the data transmitted, such an
analyzer locates and identifies faults which have
arisen during data transmission.

25 Within the field of communication over
"Internet" networks, the microcomputers used are
increasingly tending to be equipped with built-in
modems, making it impossible to connect a protocol
analyzer.

The aim of the invention is to alleviate this
drawback.

30 Its subject is therefore a device for
monitoring the proper conduct of a protocol for
exchanging information over a cabled telephone network,
between at least two data sending and receiving
stations, the device comprising a protocol analyzer
connected to one at least of the sending and receiving
stations, characterized in that, the station to which
35 the analyzer is connected being provided with a
built-in modulator/demodulator, the device furthermore
comprises a unit for converting the data from a first
format, according to which the data are conveyed over
the network, into a second format, according to which

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the data are adapted so as to be processed by the protocol analyzer, the conversion unit being connected between the protocol analyzer and the modulator/demodulator of the station to which the
5 analyzer is connected.

The monitoring device according to the invention can furthermore comprise one or more of the following characteristics, taken in isolation or according to all technically possible combinations:

10 - the conversion unit comprises two modulators/demodulators connected in series between the telephone network and the corresponding sending and receiving station and between which is connected the protocol analyzer, the modulators/demodulators of the
15 conversion unit operating, as a function of the direction of sending of the data, the one, as a demodulator, for the conversion of the data according to the format adapted for the processing of this data by the analyzer and, the other, as a modulator, for the
20 modulation of the data demodulated by the demodulator with a view to their transmission over the network;

- the modulators/demodulators of the conversion unit are connected together by a serial link, in particular of the RS232 type;

25 - the data conversion unit is connected, by way of a high-impedance connection facility to a data transfer line, by means of which the corresponding sending and receiving unit is attached to the network;

- the data conversion unit comprises
30 demodulation means attached to the connection facility and associated with means for discriminating between the data sent by the sending and receiving station closest to the analyzer and the data sent by the most distant station; and

35 - the demodulation means comprise two demodulators connected in parallel to the connection facility and ensuring, the one, the demodulation of the data originating from the closest sending and receiving station and, the other, the demodulation of the data

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sent by the most distant station, the discriminating means comprising means for comparing the level of reception conveying said data.

Other characteristics and advantages will emerge from the following description, given merely by way of example and with reference to the appended drawings in which:

- Figure 1 is a diagram representing the general architecture of a telecommunication network equipped with a monitoring device in accordance with the invention;

- Figure 2 is a schematic diagram of a first embodiment of the monitoring device of figure 1; and

- Figure 3 is a schematic diagram of a second embodiment of the monitoring device of figure 1.

Represented in figure 1 is a schematic diagram of a telecommunication network.

It is intended to ensure the transfer of data over a telecommunication network 10, such as an Internet type communication network, between at least two data sending and receiving stations.

Represented in this figure is a single data sending and receiving station 12, consisting of a microcomputer connected to a telephone line 16, by way of a data transmission line 14, fitted with a telephone socket 18 of conventional type.

As may be seen in this figure 1, the telephone line 16 communicates with the Internet network 10 by means of an access provider 20 and by way of a cabled telephone network 22, which are represented diagrammatically in this figure.

The data sending and receiving station with which the microcomputer 12 communicates is connected to the telephone network 22.

Of course, it may also be connected to a network of another provider, such as 24.

As is conventional, the microcomputer 12 as well as, if appropriate, the sending and receiving station with which this microcomputer communicates are

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each fitted with a built-in modem (not represented in this figure) allowing the modulation of the data with a view to their transmission over the networks, and, on reception, their demodulation.

5 It may be seen furthermore that a protocol analyzer 26 is connected to the microcomputer 12 with a view to monitoring the proper conduct of the information exchange protocol used for the transfer of data between the data sending and receiving stations.

10 More particularly, it will be plugged into the telephone socket 18, between the data transfer line 14 and the telephone line 16.

15 It will be noted that the analyzer 26 consists of a protocol analyzer of conventional type. It will therefore not be described in detail hereinbelow.

It will however be noted that it consists for example of a "Clarinet" type protocol analyzer.

20 Finally, it may be seen in figure 1 that the network represented in this figure is supplemented with a unit, designated by the general numerical reference 28, for converting the data transmitted between the sending and receiving units, by way of which the analyzer 26 is connected to the data transfer line 14.

25 This conversion unit 28 ensures the conversion of the data from a first format, according to which the data are conveyed, after modulation, between the data sending and receiving stations on the Internet network 10, on the cabled telephone network 22 and possibly on the third-party network 24, into a second format
30 according to which the data are adapted so as to be processed by the protocol analyzer 26, that is to say according to a format according to which the data are demodulated and are for example provided to the analyzer 26 by means of a V24 type line.

35 Represented in figure 2 is a first embodiment of the conversion unit 28.

In this figure, the telecommunication network has been represented diagrammatically by two data sending and receiving units 30 and 32 each fitted with

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a modem, 34 and 36 respectively, connected to a line 38 of the telecommunication network.

It may be seen in this figure that the conversion unit 28 comprises two modulator/demodulator circuits 40 and 42 connected in series between the
5 cabled telephone network and one, 30, of the sending and receiving stations.

The two modulator/demodulator circuits 40 and 42 are connected together by means of a serial link 44,
10 for example of the RS232 type, into which the protocol analyzer 26 will be plugged (figure 1).

It will be noted that the modulator/demodulator circuits 40 and 42 operate according to antagonistic modes of operation. Thus, as a function of the
15 direction of sending of the data between the two stations 30 and 32, one of the modulator/demodulator circuits operates as a demodulator in such a way as to demodulate the data signals sent by the sending station, the other circuit operating as a modulator in
20 such a way as to modulate the data signals demodulated by the first modulator/demodulator circuit.

Accordingly, the data signals conveyed on the serial link 44 between the two modulator/demodulator circuits 40 and 42 exhibit a format adapted so as to be
25 processed by the protocol analyzer 26 and, downstream of the data conversion unit 28, considering the direction of flow of the data, these signals exhibit a format adapted so as to be conveyed on the telecommunication networks, insofar as the
30 modulator/demodulator circuit operating as a modulator recreates the modulation performed by the modulator/demodulator 34 or 36 of the sending station.

It will be noted that, preferably, the modulator/demodulator circuits 40 and 42 are preferably
35 of self-adaptive type, in such a way as to recognize and adapt automatically to the modulation performed by the sending station.

Represented in figure 3 is another embodiment of the data conversion unit 28.

In this figure, elements identical to those of figure 2 bear the same reference numbers.

5 It may be seen, in this figure 3, that the data conversion unit 28 is linked to the line 38 by way of a high-impedance connection facility 46, consisting for example of a differential transformer, in such a way as to tap off the data conveyed on this line without disturbing the operation of the network.

10 The data thus extracted are input to two demodulator circuits 48 and 50, by way of an amplifier 52.

15 As may be seen in this figure 3, the two demodulator circuits 48 and 50 are disposed in parallel and ensure, the one, 48, the demodulation of the data originating from the closest sending and receiving station 30 and, the other, 50, the demodulation of the data sent by the most distant station 32.

20 The data thus demodulated have a format adapted for their processing by the protocol analyzer 26. They are input to the latter by means of a link 51, for example of the V24 type, with a view to monitoring the proper conduct of the communication protocol used for exchanging data between the sending and receiving stations 30 and 32.

25 To perform the discrimination between the data signals originating from the sending station closest to the conversion unit 28 and the data signals originating from the most distant unit, the corresponding signals, extracted from the line 38 by the connection facility
30 46, which correspond, the one, to a high reception level and, the other, to a low reception level, are compared in the demodulator circuits 48 and 50. Such a comparison is performed either by inter-comparison of the signals, or by comparison with respect to a
35 threshold value.

The data signals thus discriminated and demodulated, which correspond, the one, to a send signal and, the other, to a receive signal, are each

supplied to the protocol analyzer 26 by way of a specific junction wire, 54 and 56 respectively.

Thus, in the case of the use of a V24 type link for connecting the protocol analyzer 26 to the conversion unit 28, junction wire number 103 of the V24 link is used to provide the protocol analyzer 26 with the data originating from the closest data sending and receiving station. Likewise, junction wire number 104 of the V24 link is used to provide the analyzer 26 with the data originating from the most distant station.

It is appreciated that the invention just described, which comprises a data conversion unit fitted with demodulation means, allows the connecting of protocol analyzers of various types to 15 microcomputers fitted with built-in modems.

Moreover, insofar as the connecting of the conversion unit is done by means of a telephone socket, it is appreciated that the installing of such a device is particularly easy to perform.

CLAIMS

1. A device for monitoring the proper conduct of a protocol for exchanging information over a cabled telephone network, between at least two data sending and receiving stations (12, 30, 32), the device comprising a protocol analyzer (26) connected to one at least of the sending and receiving stations (12, 30, 32), characterized in that, the station to which the analyzer (26) is connected being provided with a built-in modulator/demodulator (34, 36), the device furthermore comprises a unit (28) for converting the data from a first format, according to which the data are conveyed over the network, into a second format, according to which the data are adapted so as to be processed by the protocol analyzer (26), the conversion unit (28) being connected between the protocol analyzer (26) and the modulator/demodulator (34, 36) of the station to which the analyzer is connected.

2. The device as claimed in claim 1, characterized in that the conversion unit (28) comprises two modulators/demodulators (40, 42) connected in series between the telephone network and the corresponding sending and receiving station and between which is connected the protocol analyzer (26), the modulators/demodulators (40, 42) of the conversion unit operating, as a function of the direction of sending of the data, the one, as a demodulator, for the conversion of the data according to the format adapted for the processing of this data by the analyzer (26) and, the other, as a modulator, for the modulation of the data demodulated by the demodulator with a view to their transmission over the network.

3. The device as claimed in claim 2, characterized in that the modulators/demodulators of the conversion unit are connected together by a serial link (44), in particular of the RS232 type.

4. The device as claimed in claim 1, characterized in that the data conversion unit (28) is connected, by

way of a high-impedance connection facility (46) to a data transfer line, by means of which the corresponding sending and receiving unit is attached to the network.

5. The device as claimed in claim 4, characterized

5 in that the data conversion unit comprises demodulation means (48, 50) attached to the connection facility (46) and associated with means for discriminating between the data sent by the sending and receiving station closest to the analyzer (26) and the data sent by the
10 most distant station.

6. The device as claimed in claim 5, characterized in that the demodulation means comprise two demodulators (48, 50) connected in parallel to the connection facility and ensuring, the one, the
15 demodulation of the data originating from the closest sending and receiving station and, the other, the demodulation of the data sent by the most distant station, the discriminating means comprising means for comparing the level of reception conveying said data.

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Device for monitoring the proper operation
of an information exchange protocol

ABSTRACT

This device for monitoring the proper conduct of a protocol for exchanging information over a cabled telephone network, between at least two data sending and receiving stations (12), comprises a protocol analyzer (26) connected to one at least of the sending and receiving stations (12). The latter being provided with a built-in modulator/demodulator, the device furthermore comprises a unit (28) for converting the data from a first format, according to which the data are conveyed over the network, into a second format, according to which the data are adapted so as to be processed by the protocol analyzer (26), the conversion unit (28) being connected between the protocol analyzer (26) and the modulator/demodulator of the station to which the analyzer is connected.

Fig. 1

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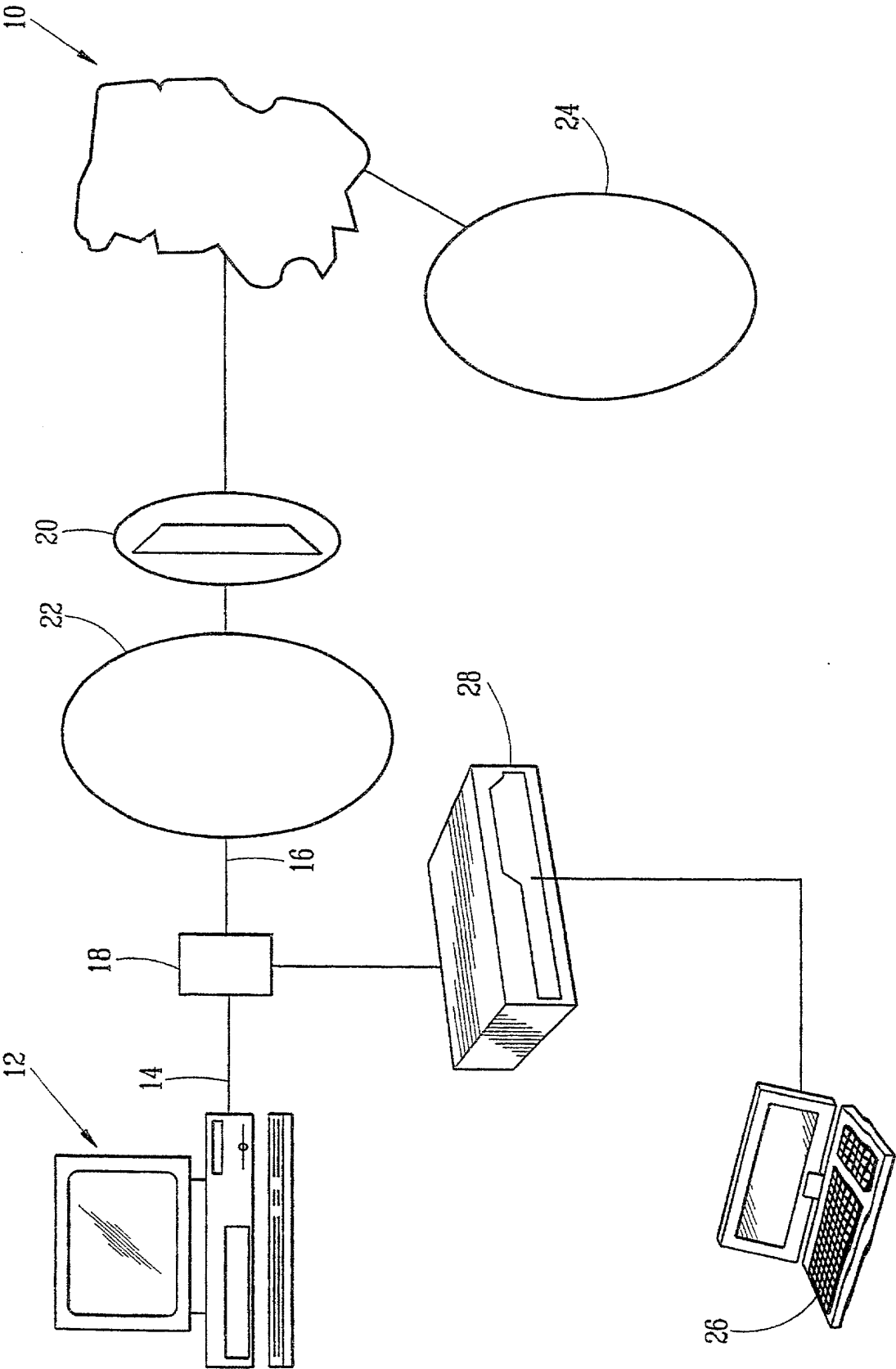


FIG. 1

FIG. 1

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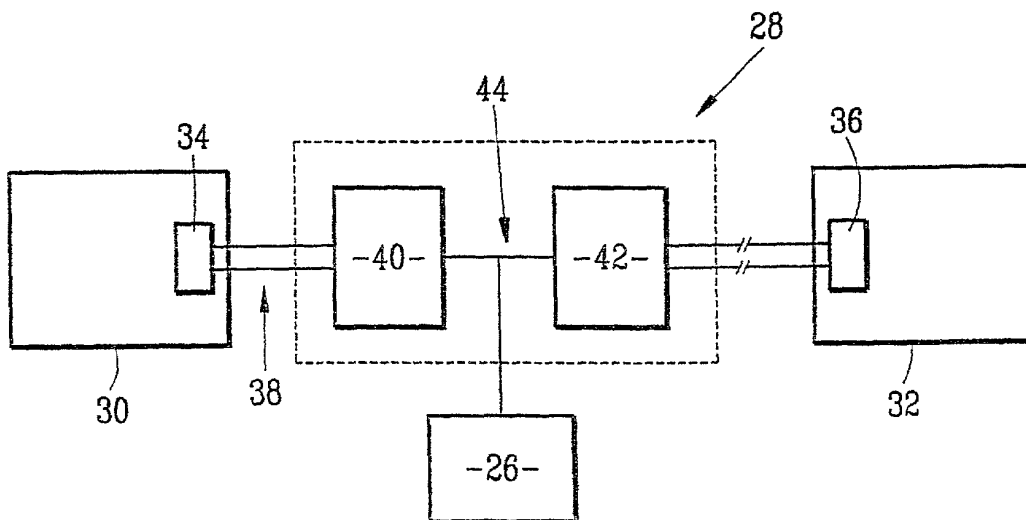


FIG.2

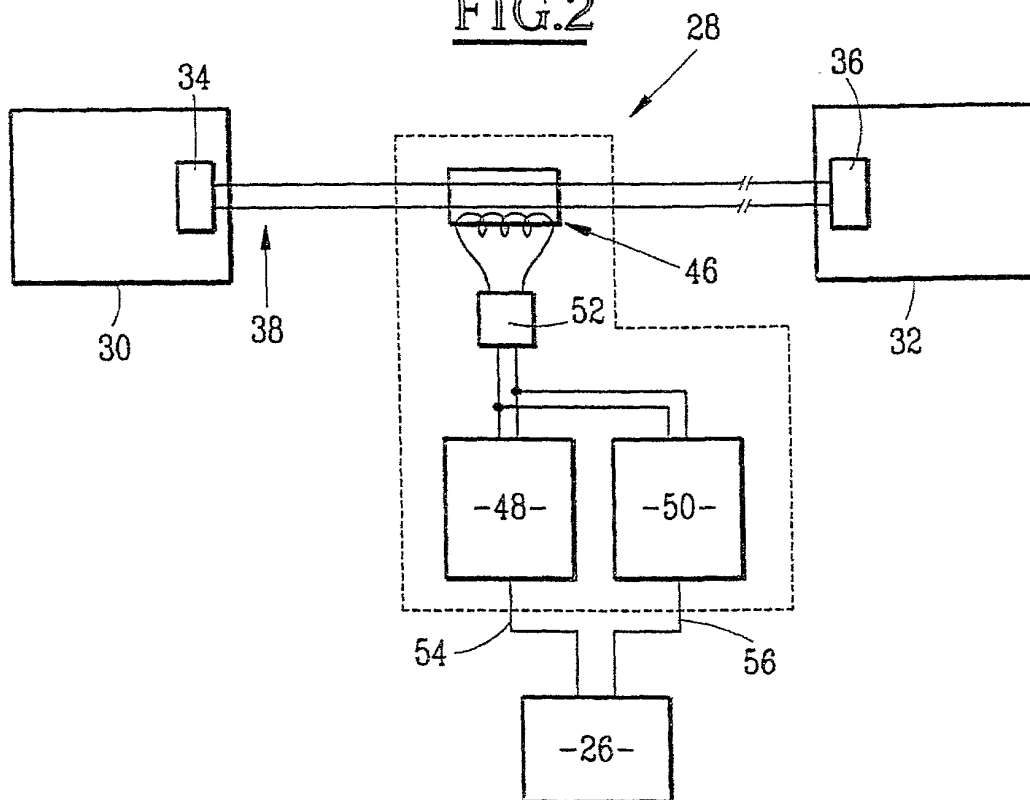


FIG.3

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POWER OF ATTORNEY

The undersigned hereby authorizes the U.S. attorney or agent named herein to accept and follow instructions from _____ as to any action to be taken in the Patent and Trademark Office regarding this application without direct communication between the U.S. attorney or agent and the undersigned. In the event of a change in the persons from whom instructions may be taken, the U.S. attorney or agent named herein will be so notified by the undersigned.

As a named inventor, I hereby appoint the registered patent attorneys represented by Customer No. 000466 to prosecute this application and transact all business in the Patent and Trademark Office connected therewith, including: Robert J. PATCH, Reg. No. 17,355, Andrew J. PATCH, Reg. No. 32,925, Robert F. HARGEST, Reg. No. 25,590, Benoît CASTEL, Reg. No. 35,041, Eric JENSEN, Reg. No. 37,855, Thomas W. PERKINS, Reg. No. 33,027, and Roland E. LONG, Jr., Reg. No. 41,949.



00466

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full name of sole or first inventor: Robert LE PICHON
(given name, family name)

Inventor's signature _____

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Inventor's signature _____

Date _____

Residence: _____

Citizenship: _____

Post Office Address: _____

Full name of third joint inventor, if any:
(given name, family name)

Inventor's signature _____

Date _____

Residence: _____

Citizenship: _____

Post Office Address: _____

Full name of fourth joint inventor:
(given name, family name)

Inventor's signature _____

Date _____

Residence: _____

Citizenship: _____

COMBINED DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

" Device for monitoring the proper operation of an information exchange protocol ".

the specification of which: *(check one)*

REGULAR OR DESIGN APPLICATION

☐ is attached hereto.

☐ was filed on _____ as application Serial No. _____ and was amended on _____ (if applicable).

PCT FILED APPLICATION ENTERING NATIONAL STAGE

☒ was described and claimed in International application No. PCT/FR99/02024 / _____ filed on August 20, 1999 / and as amended on _____ (if any).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, §1.56.

PRIORITY CLAIM

I hereby claim foreign priority benefits under 35 USC 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed.

PRIOR FOREIGN APPLICATION(S)

Country	Application Number	Date of Filing (day, month, year)	Priority Claimed
FRANCE /	98 10785 /	27/08/98 /	YES

(Complete this part only if this is a continuing application.)

I hereby claim the benefit under 35 USC 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of 35 USC 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37 Code of Federal Regulations §1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application:

(Application Serial No.)

(Filing Date)

(Status: patented, pending, abandoned)